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To Advance the Science of Cold-blooded Vertebrates

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SOME PICKEREL NAMES*

In connection with a review of the genus *Esox* now under way, it has been necessary to study critically some old descriptions, with interesting results.

Early in the last century, four scientific gentlemen, Messrs. Maclure, Ord, Say and Peale made a more or less extensive tour of East Florida on foot. The country was flooded, so that there were occasions when they seem to have traveled some distance along flooded footpaths. In the course of their travels they saw a fish in the path before them. Say thought it was a member of the genus *Esox*, and told LeSueur about it on their return. March 3, 1818, LeSueur read before the Philadelphia Academy of Natural Science a paper entitled "Description of several new species of the genus *Esox* of North America."

In that paper he gave the following description: "Mr. Say communicated to me the following notice of a species which inhabits East Florida, and which it will be proper to insert here, with the characters which he has given to it."

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"4. *E. phaleratus* (Say). Body dusky, with a vertebral fulvous vitta, and three or four fulvous fascia."

"Inhabits East Florida."

"This elegant species we discovered during a pedestrian excursion from Picolata to St. Augustine. The country at that time was partially inundated and this specimen occurred in the foot way. But having been unsuccessful in our efforts to catch it, and not having noticed the circumstance at the time, the above description is made entirely from memory, and therefore cannot be relied upon as exact with respect to the ground color, or to the number of bands; there may possibly be also a lateral vitta beside the dorsal one. These bands and lines are of a bright color, so as to contrast strongly with that of the general surface, giving to the body a very strikingly harnessed appearance. It resembles *E. lucius* in the form of the head."

Here is a striking description of a fish, which does not give a single character of diagnostic value. This "harnessed" appearance is typical of all young members of the genus up to a length of perhaps eight inches. Two species are known to exist in that part of Florida, *Esox tridecemlineatus* and *Esox americanus*. At the size which this small fish must have been, these two are not distinguishable except by measuring the proportions of the head. The only indication might be that the fish had run out on the flooded land. That would seem to indicate that the fish was mature and taking advantage of the high water for egg laying. It seems that the old guesses that the fish was *Esox tridecemlineatus* are hardly as plausible as to guess that it was *Esox americanus*.

Also, there is another bit of evidence. In the copy of the Journal of the Philadelphia Academy of Natural Science in the John Crerar Library in Chicago are several pencil notes which seem to indicate that this book was once the property of the same George Ord who was with Say when the fish was seen. At the

bottom of page 416, is the following note in pencil:
"This account is all fudge, and I told Say so. The fish was seen but for a moment, and even its genus could not be ascertained."

(Signed) G. Ord

In the same paper is a description of *Esox niger*, from Saratoga Lake (New York?). This has been generally put in the synonymy of *Esox americanus*, but there seems to be at least equal reason for assigning it to *tridecemlineatus*, in which case it would have priority. The only characters of diagnostic value are the counts of branchiostegals, dorsal and anal, they are given as: "B. 17, D. 14, A. 14." In an examination of several hundred specimens of this group of *Esox*, I have found few cases where the number of dorsal and anal rays was equal. I have found about as many specimens of *americanus* as of *tridecemlineatus* with both dorsal and anal rays 14. However, I have never found a specimen of *americanus* with more than 15 branchiostegals. Thus, we are left with the evidence of a single character to support the supposition of LeSueur and the belief of several of his contemporaries that *Esox niger* is the young of his *Esox reticulatus*. His type specimen is apparently lost, if it was ever preserved, and we must depend on historical evidence to determine whether the proper name of the Chain Pickerel is *Esox niger* or *Esox tridecemlineatus*. If it can be shown that only one of these species was existing in Saratoga Lake something more than a hundred years ago we may be sure of our facts. If both were there the presumption is strong that *Esox niger* is a synonym of *Esox reticulatus* LeSueur.

ALFRED C. WEED

Field Museum,
Chicago, Ill.

THE LIFE COLORATION OF
Myoxocephalus Mitchilli
(CUVIER AND VALENNCIENNES)

A specimen identified as *Myoxocephalus mitchilli* (Cuvier and Valennciennes) was brought to the New York Aquarium alive by Mr. L. L. Louve of New York City who had taken it on March 25, 1925 by hook and line at Long Beach, Long Island. It measured 87 mm. in standard length (tip of snout to root of tail) and was in perfect condition except for a slight oral wound made by the hook, although it lived only a few minutes. While still fresh the following color notes were made, which are of significance since Jordan and Evermann* considered the species synonymous with *M. aeneus* (Mitchill).

Upper half of sides olive grey with a tinge of greenish. Four darker bars of the same color cross the sides with a very slight forward trend downward, nearly vertical; the first originating between the first and fourth dorsal spines; the second between the sixth and seventh spines; the third, much wider, between the fourth and next to last soft rays; the fourth between the narrowest part of the caudal peduncle and the base of the caudal rays and somewhat more oblique than the other. Below, the coloration of the sides is abruptly met by the light immaculate green of the ventral surface, in an interdigitating manner. Anteriorly the latter reaches up almost to the scapular, from whence it is bounded by a wavy line diagonally backward and down nearly to the vent, from there rising slightly and running nearly parallel to the base of the anal about a pupils diameter from it, immediately over the posterior part of which it rises to the mid-line and then drops off again forming only a narrow band of the ventral green on the under side of the caudal peduncle. Three similarly colored spots

*"The Fishes of North and Middle America" Bull. U. S. Nat. Mus. Part II.
1898 p. 1973.

are above this line of demarcation paralleling the base of the anal, the second somewhat confluent with the ventral area of the same color. Above this a few minute punctulations of the same pale green. Forward of this, also above dorso-ventral color division, some black dots. A single median spot of pale green at the base of the caudal rays.

Dorsal part of head similar to dorsal part of body but variously shaded with darker. Ventral surface of head similar to, but of a deeper green than the abdomen. Mandibular bones followed by irregular dusky marks. Maxillary dark; premaxillary green with dark markings; membranes greenish, immaculate; symphysis of lower jaw with a light yellow spot. Interior of mouth uniformly bright green. Iris mottled with olive green and grey on very pale brassy, edging pupil with a fine golden line. Vent deep green same as inside of mouth, and edged with yellowish.

Distal half of spinous dorsal dark, proximal half transparent excepting membrane between fifth and sixth spines which is dark to base. Spines light, tipped with orange. Proximal third of soft dorsal dusky, blending into distal part which is reticulated with the same shade, leaving numerous clear spots on the membrane. Rays lighter, tan colored. Caudal membrane pigmentless, exceedingly transparent. Rays alternately reddish brown and pale yellow, the former about the diameter of pupil or less, but irregular, the latter about one quarter of this. Markings more or less staggered from one ray to another, not forming pronounced bands across fin. Tips of rays slightly more reddish than rest. Anal membranes for most part dusky with edges milk white except first which is entirely white and last which is nearly transparent. The green of the ventral surface of body running onto the membranes as semicircular basal spots the diameters of which are equal to the distances between consecutive rays. A series of pale spots, one on each membrane, except the first and last, half way between

bases and tips of rays. Rays decidedly reddish. Some of this color reaching onto the dark parts of the membranes. Ventrals with four dark, nearly black transverse stripes alternating with five light ones from which they are partly separated by narrow transparent areas widest on the membranes. The light bands vary from the green of the ventral surface, proximally, to milk white distally. Pectorals with a light green spot at the bases of the third to fifth rays interrupting a broad dark basal band present on the bases of the other rays. Another spot not reaching out onto the rays or interrupting the bar at base of the last five rays. Two similar spots opposed to these on axillary side, the first confluent with the green of the abdomen. Distally from the dark basal band the membranes mostly clear but crossed by about five irregular narrow nearly black bars somewhat broken up into spots. Rays pale yellowish green.

After a few days in alcohol the green entirely disappeared, leaving the abdomen and other similar parts white and the upper colorations of the sides and head brownish instead of olive. The fins except the proximal parts of the anal, ventrals and pectorals remained practically unchanged as the suffusion of green only affected the colors of the head body and did not extend onto the fins except as noted.

Comparing this specimen with notes made by J. T. Nichols at Lloyd's Point Harbor, Long Island on the life colors of a slightly larger specimen of *M. aeneus* (114 mm. in standard length) which he allowed me to use, the following chief color differences appear.

M. mitchilli

1. Mandibular bones followed by dusky marks
2. Second dorsal reticulated with dusky, showing clear spots on membranes. Rays lighter.

M. aeneus

1. Dark and brassy marks on under side of head.
2. Second dorsal olive grey with small greenish points.

- 3. Caudal membranes transparent, the rays alternately reddish brown and yellow.
 - 4. Pectoral with dark band an two prominent pale green spots at base. Narrowly banded with broken stripes distally.
 - 5. Ventrals with four broad black transverse stripes.
 - 6. Anal dark, edged with white, based with pale green, and containing a row of light spots mesially. Rays and dark parts reddish.
- 3. Caudal olive grey, spotted with dark.
 - 4. Pectoral marked like caudal.
 - 5. Ventrals white with black spots on rays more or less arranged in bars.
 - 6. Anal marked like ventrals.

In addition the back appears to be not so elevated in *M. mitchilli*, depth 4.6 as against 4.0 for *M. aeneus* given by Jordan and Evermann. The dorsal spines appear to be somewhat longer, the longest (fifth) 2.1 in head. In *M. aeneus* the longest spine is more anterior, giving the fin a very different outline. The green coloration seen in the present specimen is probably of no diagnostic significance as the ventral surfaces of both species are supposed to be white and likely frequently vary in this direction. The figure of *M. aeneus* given by the above writers is of a fish of decidedly different appearance than the present specimen.

Unless the two species could be shown to intergrade there appears to be no good reason at present for considering them identical. Roy Latham, who has handled many of both, has recognized this species for long and recorded it repeatedly in Copeia as follows: May '16, No. 31; March '17, No. 41; July '19, No. 71; May '18, No. 57; His dates show it to be probably a spring and fall visitor, or at least one that is absent

during the warmest time of the year. April 14, May 19, June 28, November 25, and December 24 are his dates. This is the first record of the species from Long Beach, Orient being the nearest locality from which it has been previously definitely recorded. Mr. Nichols suggested that the occasional records of *M. groenlandicus* (C. & V.) made locally actually refer to this species which it somewhat resembles, so identifying a specimen in the American Museum of Natural History (No. 718) from Gravesend Bay, Long Island.

C. M. BREDER, JR.

New York Aquarium

